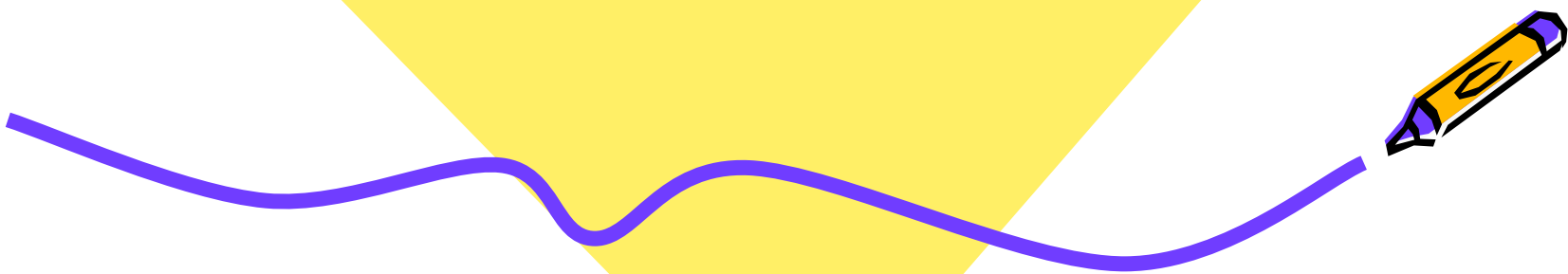




Science Fair



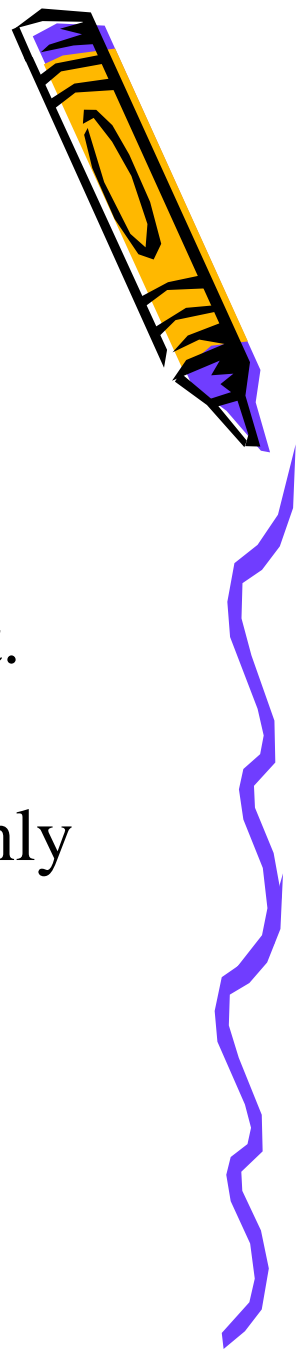
How to Select a Science Fair Idea!



- **Choose a topic that interests you.**
- **Make sure your experiment is testable.**
- **Come up with an idea for a scientific experiment by observing a certain phenomenon and writing down your observations.**
- **Gather information about the topic you want to experiment on.**



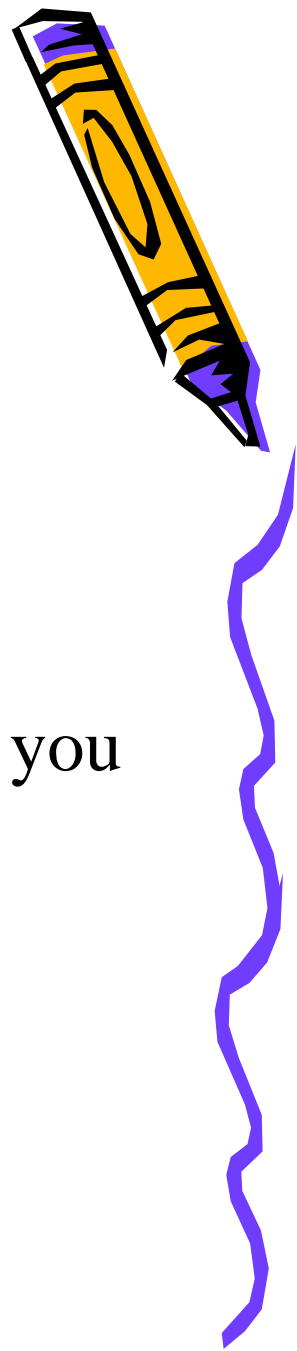
How to Select a Science Fair Idea!



- Be sure you are able to gather the necessary materials for your experiment.
- Identify possible variables in your experiment. Variables are things that change.
- When designing your experiment try to use only one variable and include a control so that you have something to compare the changes to.



How to Select a Science Fair Idea!



- Be sure to allow yourself enough time to complete your experiment.
- Choose a topic that is challenging and makes you curious about other things.



Science Fair Board



- The display poster board is an important tool for the presentation of your research.
- The objective of a display board is to present the main areas and conclusions of your project so that others can easily understand what you accomplished.



Science Fair Board



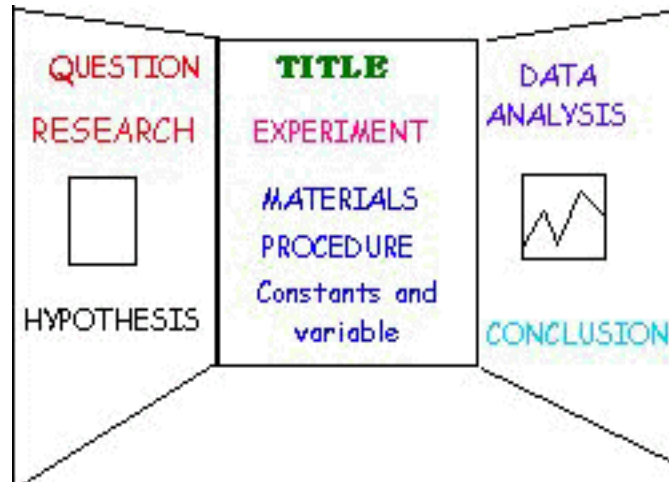
- Think of the display board as a commercial for your project.
- The display board will state the main points and key features of your research so that others will understand what you did and how you did it.
- It is a good idea to arrange your project information so that observers can read your display in logical order.
- Part of your challenge is to make it easy for others to understand your work.



Plan Your Board



- Make a small sketch of where everything will go.
- Lay it out before you glue anything down to make sure it looks good.



Title



- The title and other headings should be neat and large enough to be read at a distance of about 3 feet (1 m).
- A title may state the specific variables you investigated or may be worded creatively to capture the audiences attention.
- Example 1: The Effect of Tire Type on Wheel Slippage in Centimeters.
- Example 2: Tired Trucks: It's All Up Hill!



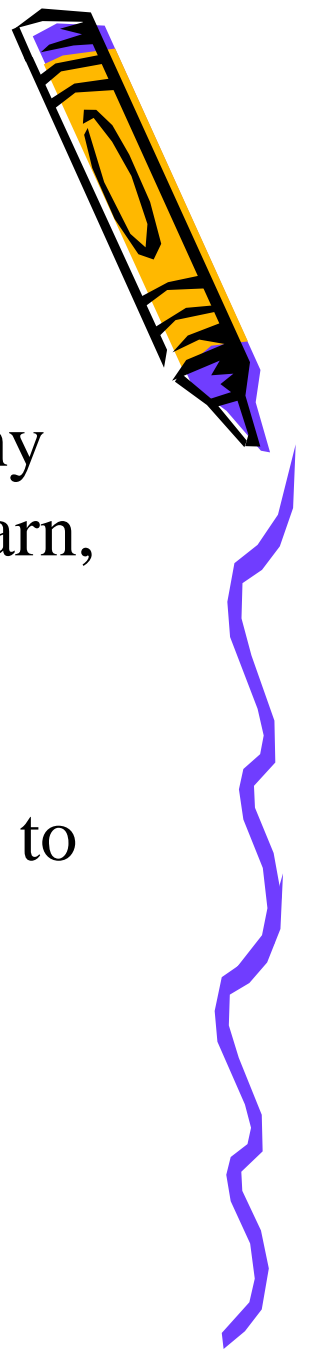
Title



- You can purchase, at office supply stores, self-sticking letters of various sizes and colors for the title and headings and stick them to the backboard.
- You can cut your own letters out of construction paper or stencil the letters for all the headings directly onto the backboard.
- You can also use a word processor to print the title and other headings.



Problem Statement



- The problem statement tells your audience why you did the experiment, what you hoped to learn, and what you thought would happen.
- Be brief!
- Example: The purpose of this experiment was to determine the which brand of tires was more effective in eliminating tire slippage .



Hypothesis

- Your hypothesis should be made before you conduct your experiment.
- You should try to predict what is going to happen.
- You need to think how changing your independent variable will affect your dependant variable.



Hypothesis



- The hypothesis is the experimenters prediction of the relationship between the independent and dependant variables in the experiment; it predicts the effect that the changes purposefully made to the IV will have on the DV.

EX: **If** the temperature of the soil is increased, **then** the rate of germination will increase.



Hypothesis



- The hypothesis should be written in an if then statement.
- EX: **If** the temperature of the soil is increased, **then** the rate of germination will *increase*.
- Your hypothesis is **never wrong!!!!**
- It is either supported or not supported by your data.



Materials List



- Your materials list should include a very detailed: include size, amount, brand etc...

Example:

- Water
- Graduated cylinder
- 2 sugar cubes
- 2 beakers or clear containers
- Stopwatch
- Other materials approved by your teacher



Procedures:



- The procedure should be written in list form, with each step numbered. This makes it much easier to follow.
- Your procedure should be clear, precise and very detailed.
- Procedures should be written so that any one wanting to duplicate the experiment may do so by following the experiment without having to ask any further questions.



Procedures



- **Step 1:** Prepare three trays by putting an equal amount of potting soil in each tray. If you are using pans or cookie sheets, spread a layer of gravel on the bottom of the pan before adding the soil.
- **Step 2:** Set Tray 1 aside. In Tray 2, cover the soil with a layer of leaves and grass clippings. In Tray 3, sprinkle grass seed on the top of the soil.



Procedure CONT:



- **Step 3:** Place the three trays in a place where they are level and have similar light and temperature conditions. (The temperature must be above 50°F (10°C) for the grass to grow.)
- **Step 4:** Use the sprinkling can to give each tray the same amount of water. Continue watering all three trays approximately every 3 days until the grass in Tray 3 is about .5 inches (1.25 centimeters) tall. This may take one week or longer. You may have to adjust your watering schedule depending on how fast the soil dries. Check the soil daily to see if it looks and feels moist.



Results



- Your results should be displayed in a way that your audience can understand. It is usually displayed in a table, graph, or photographs.



How to Make a Data Table



- The independent variable is recorded in the left column and the dependent variable is in the middle column.
- When repeated trials are conducted, the middle column is divided into smaller columns. The number of smaller columns should be equal to the number of repeated trials.
- Additional information, such as the average or the range, is recorded in the column to the right of the dependent variable column.



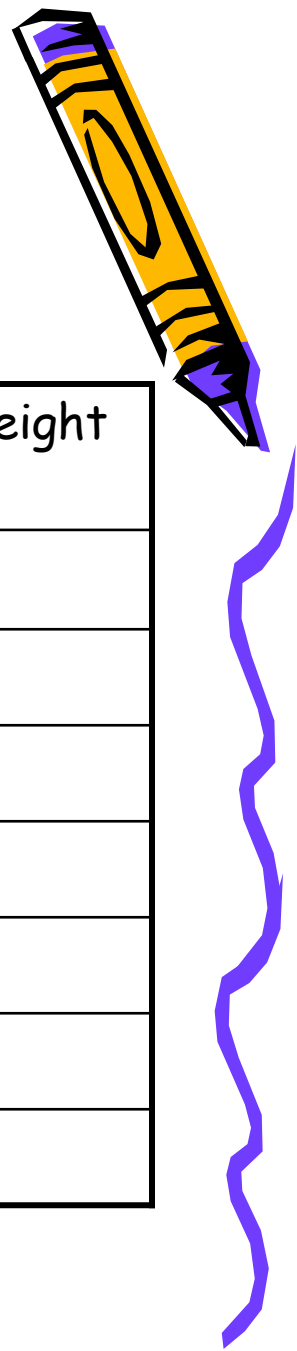
How to Make a Data Table



- When labeling the columns in a data table, include the units of measurement in parenthesis.
- The title of a data table should clearly communicate the information contained in the table.
- The variables that were investigated are usually included in the title, such as “The Effect of Number of Alcohol Drops on Evaporation Time.”



The Effect of Temperature of Water on Plant Height



Temperature of Water (°C)	Plant Height (cm) Trials				Average Plant Height (cm)
	T1	T2	T3	T4	
25	33	34	32	32	33
30	30	28	28	31	29
35	24	23	21	23	23
40	24	23	21	23	16
45	11	12	10	12	12
50	8	12	11	11	11



Graphs

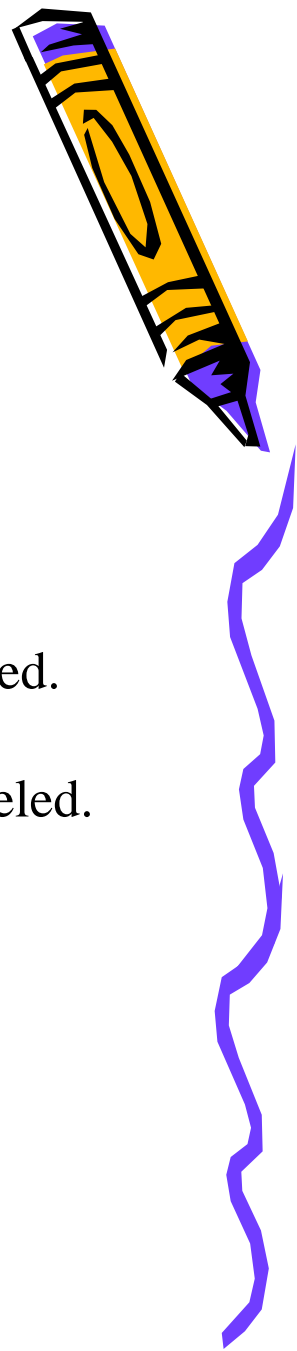
- A graph is a picture that helps you and others to understand data at a glance.
- You can use different types of graphs to present data.



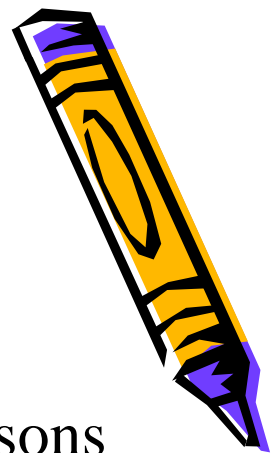
Graphs

Most graphs have the same basic parts.

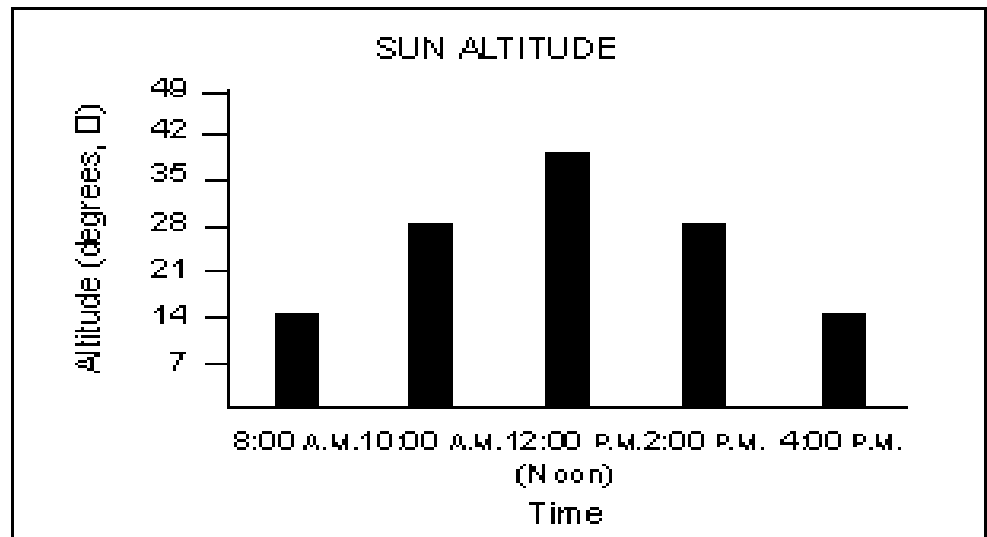
1. A Title
2. Dependant variable always goes on the Y axis, and must be labeled.
3. Independent variable always goes on the X axis, and must be labeled.
4. An Appropriate Scale.



Graphs

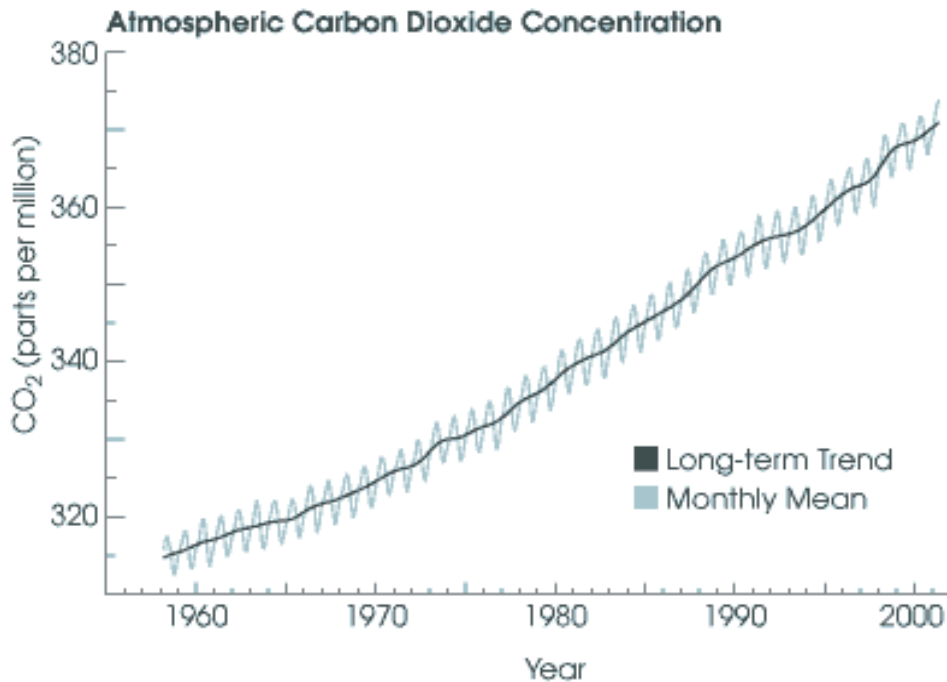


- Bar graphs are graphs that uses bars to show comparisons among categories. One axis shows the categories being compared and the other axis represents the discrete value.

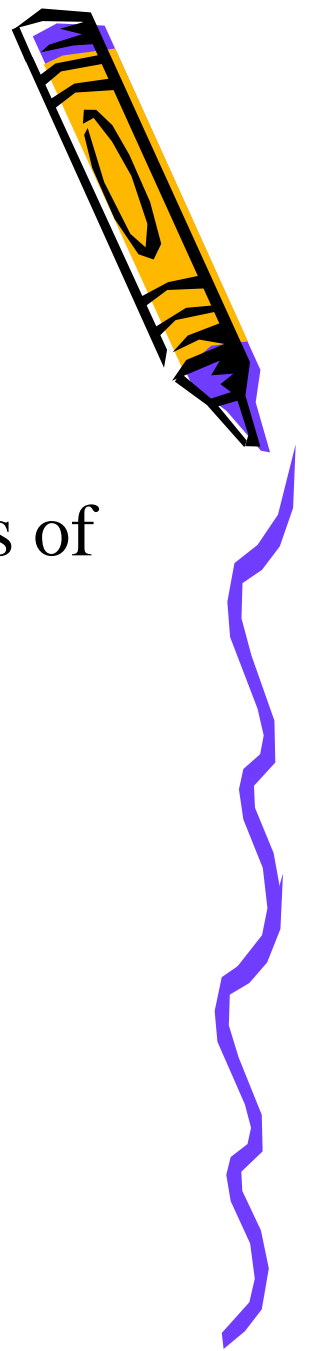


Line Graph

- A line graph is used when the data changes over time.

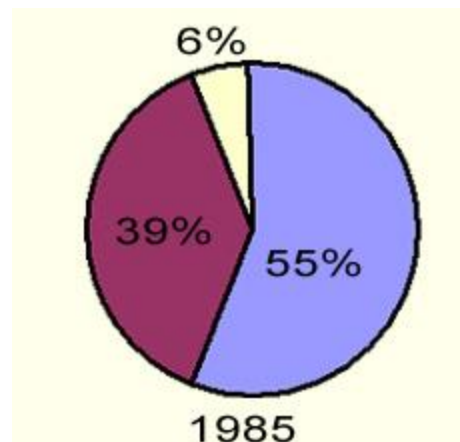


Pie Chart



- Circle graphs or pie charts are used to give a quick view of the relationship among the parts of a whole. They are typically used to show percentages.

Per Capita US Consumption of Milk, 1975-95



Conclusion

- Conclusion is a summary of your experiment.
- A good conclusion can be written by answering six questions.



Conclusion Six Questions:

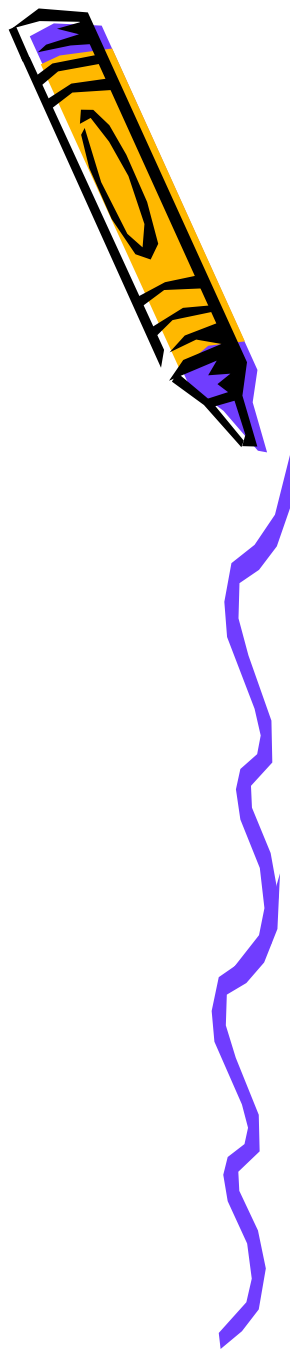


- What is the purpose of the experiment?
- What were the major findings?
- Was your hypothesis supported by the data?
- How did your finding compare with other research or with information in the textbook?
- What possible explanation can you give for the finding?
- What recommendations do you have for further study and for improving the experiment?



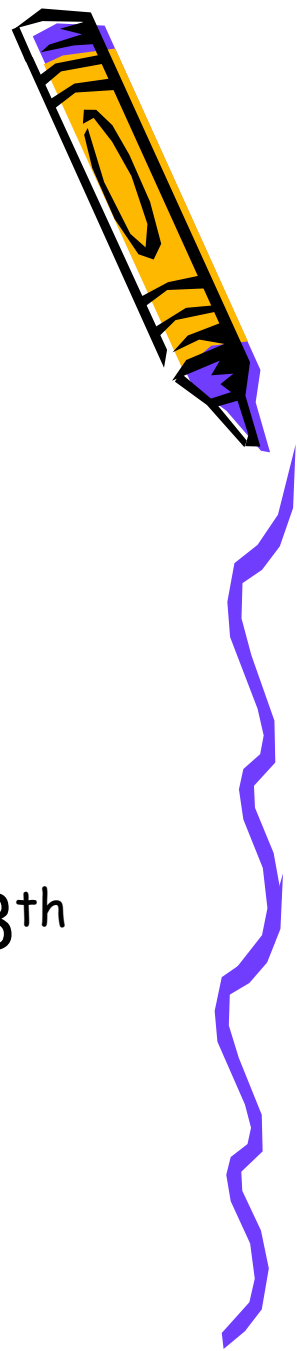
Helpful Hints

- Be creative.
- Be organized.
- Pay attention to detail.
- Think outside the box.



MMS Science Fair

- Set-up February 7th after school.
- Judging February 8th during the school day.
- Local fair open to the public February 8th 5:00-7:00.



Good Luck and Have Fun!

